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mindlights
PROFESSIONAL AUDIO-VISUAL STIMULATION MINDFIELD®

MANUAL

INSTRUCTIONS FOR INSTALLATION AND USE
· SOFTWARE · AUDIO-VISUAL STIMULATION

MINDFIELD® BIOSYSTEMS

Welcome / Introduction

Congratulations on the purchase of your own MindLights®. You now hold a high-quality, hand-made, »high-end« product for enhancing your wellbeing. Worldwide, there is no counterpart for this product. We, the Mindfield® Biosystems Ltd. have our roots in the development of audio-visual devices for stimulation and we can prove our long-standing experience in this field. The MindLights® implement the current standards of technology which are linked to many direct demands of our customers, who have contributed a lot of ideas during the development of this product.

The MindLights® represent a device for audio-visual stimulation, also labeled »Mind Machine», »AVS«, or »audio-visual Entrainment«. These instruments are a modern and very effective way to induce relaxation, peace of mind, stress reduction, and an overall balance for the user. This has a positive outcome for your daily routine and wellbeing. To an increasing degree these devices are also applied during treatment of health issues.

During the last years we have seen progress in scientific research regarding audio-visual stimulation. Many positive effects on a broad scale of diseases, such as tinnitus, AD(H)D, chronic stress, burn-out, depression and migraine have been proven. The chapter »Research« (p. 46) includes further information on this subject. In addition, you can find publicly available papers on our website www.mindfield.de

The MindLights® provide you with all the advantages of this technology: The inexperienced user will find it easy to get used to the subject and reach his goals. The sophisticated user will find a maximum of flexibility. The possibilities of individually adjusting the MindLights® to your demands are greater than for any other product. This provides you with the maximal benefits so you can achieve results in the shortest amount of time.

This manual elaborates in detail on all functions of the MindLights® and the annexed software for your PC which controls the device. Scope of delivery includes a poster which briefly explains the most important parts, so you can start right away.

Have fun with this individual and high-quality product, »Made in Germany«.

1 Huang et. al, 2008: A Comprehensive Review Of The Psychological Effects Of Brainwave Entrainment

Please read this manual thoroughly upon utilization of the MindLights®!
Also pay close attention to the safety advices on page 8!

2 Thomas Budzynski, Ph. D.: The Clinical Guide to Sound and Light

Research on audio-visual stimulation

Extensive scientific studies have been performed to investigate the effects of audio-visual stimulation.

Studies using electroencephalography (EEG) data have shown changes in the brain's electrical activity caused be the auditive and visual stimuli[1,2]. Furthermore, clinical studies have shown improvements in the field of stress and anxiety problems, pain reduction, and positive effects on concentration disorders and behavioral abnormalities[3].

An investigation concerning migraine and tension headache resulted in a reduction of pain intensity in 49 of 50 patients, and migraine disappeared completely in 36 patients[4].

The university of Hamburg has years of experience in the treatment of tinnitus patients with audiovisual stimulation. The stimulation patterns for tinnitus treatment used in the MindLights(r) Software are provided by professor Dr. Dipl.-Psych. S. Tönnies.

Further information on studies and publications is available on our website www.mindfield.de

1 Collura, T.F. (2001). Application of repetitive visual stimulation to EEG neurofeedback protocols. Journal of Neurotherapy, 6(1), 47-70.

2 Frederick, J.A., Timmerman, D.L., Russell, H.L., & Lubr, J.F. (2004) EEG coherence effects of audio-visual stimulation (AVE) at dominant and twice dominant alpha frequency Journal of Neurotherapy, 8(4), 25-42.

3 Huang, T.L., & Charyton, C. (2008) A comprehensive review of the psychological effects of brainwave entrainment. Alternative Therapies in Health and Medicine, 14(5).

4 Anderson, D. (1989) The treatment of migraine with variable frequency photic stimulation. Headache, 29, 154-155.

5 S. Tönnies (2006) Entspannung für Tinnitusbetroffene durch Photostimulation. HNO 2006 · 54:481–486.

Scope of Delivery

- MindLights® USB-stick incl. software, driver unit & manual (PDF)
- MindLights® LED-mask
- MindLights® headphones
- MindLights® manual
- MindLights® cleaning tissue
- MindLights® suitcase

Areas of Application for the MindLights®

The MindLights® are a product for the benefits of your health and the promotion of your well-being.

The current state of experience allows for the following range of applications (this statement is not exhaustive).

Mental Fitness and Vitality

- Increase in powers of concentration, comprehension and memory
- Overcoming tiredness and states of exhaustion

Relaxation and Stress Management

- Procuring states of deep relaxation
- Elevation of stress-resistance

Meditation, Mental Training, Trance and Hypnosis

- Procure meditative, trance-like states of consciousness
- Hypnagogic experience of images and imaginary journeys
- Promotion of creativity and brainstorming ability
- Utilization of hypnagogic state for autosuggestion / affirmation

Sleep

- Overcoming problems of falling asleep and insomnia
- Procuring a healthy and recreative sleep

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1. Safety Instructions for the MindLights®

Please consider the following safety instructions upon operating the Mindlights®!

If you suffer from epilepsy or there are people in your family who do, you should only use the Mindlights® after having consultated your physician. Disregarding this advice can cause an epileptic seizure.

As a basic guideline, always abort a session immediately, should any sort of indisposition occur. Some people react sensitively to quick visual amenities (photosensitivity). If you fall into this group of people then please use the Mindlights® with special caution. When you watch TV or play videogames and the rapid change of the images on screen cause you to experience illness or dizziness, the Mindlights® may also have these effects on you.

Women during pregnancy should only use the Mindlights® and other devices for audio-visual stimulation, after having consultated their physicians.

Furthermore, Application of the Mindlights® is contraindicated:

- during treatment with medication such as antipsychotic drugs (e.g. antidepressants, neuroleptic drugs,...) or mind-altering drugs
- in the case of alcohol abuse
- if disorders of the central nervous system can't be excluded

Please make sure that the USB and earphone cables are not strained or flexed. Also, do not place any sharp items on the cables.

Do not bend the Mindlights® nor apply pressure on the casing. Please treat the Mindlights® with care. Do not expose the Mindlights® to any kind of strong vibration or shock.

Please make sure that no liquid reaches the inside of the Mindlights® LED-mask or the PC. Don't store any liquids (e.g. drinking glass) near the devices.

Never open the casing of the Mindlights®. In case of a problem please contact the support of Mindfield Biosystems Ltd. The contact data can be found at the end of this manual.

When you have read all the safety instructions you are ready for your first session with the Mindlights®.

1.1 Technical Data of the Mindfield® Mindlights®

- 4 Multicolor LEDs, 2 for each eye
- Stereo sound over earphone connection
- Continuous and latency free triggering of the LEDs with multichannel soundchip modulation
- Operating voltage 5 Volt at the USB connection of a PC
- Current drain approx. 150mA

1.2 Maintenance and Reparation

The Mindlights® are basically maintenance-free. The LED-lights have an average durability of many thousand hours. Every unit of the MindLights® is tested thoroughly before delivery.

Small differences in the features of color and luminance between the LED-lights are contingent to production and do not need to be repaired. Please contact us immediately though, should the deviation increase with time, or if individual colors are not properly displayed.

We do not take any responsibility for improper application.

1.3 Cleaning

We recommend the regular cleaning of the Mindlights®, especially when they are used by different users. Please use the delivered cleaning cloth or a glasses cloth. Be sure to clean only the smooth surfaces and do not let and liquid reach the covers or the splices.

Disconnect the Mindlights® from your PC before cleaning them and also disconnect the earphones.

1.4 Disposal

The Mindlights® are labeled electronic waste regarding disposal. Therefore they are not to be disposed of with normal household waste but have to be brought to a recycling depot. Before you dispose of Mindlights® which have been in direct contact to users, you have to make sure that the material is not contaminated. When in doubt please clean and disinfect the material before disposing of it.

2. Installation / Setting-up Operation

A computer is absolutely necessary for operating the Mindlights®. This can be in the a stationary personal computer, or as often preferred, a laptop or netbook. The following system settings are required:

- System Software: Windows XP, Vista or 7, in 32bit and 64bit or Apple Mac OS X 10.5 (Leopard), 10.6 (Snow Leopard) or 10.7 (Lion)
- Minimally Intel Atom Processor with 1,2 Ghz or comparable
- Minimally 1024MB working memory
- Minimally 500MB free workspace on HD (e.g. for music and sessions)
- A Screen with a resolution of at least 1024x600 pixels
- Two (!) free USB-ports (min. USB-1.1)

For the application with laptops, we recommend using a power supply unit, since the laptop battery will quickly run low due to the power drain of the Mindlights® over the USB-port. Furthermore, application via battery may fail to supply 5 Volts on the USB port constantly, which can cause problems.

Advices for Apple™ users of the Mindfield® MindLights®

The MindLights® software supports Mac OS X 10.5 (Leopard), 10.6 (Snow Leopard) and 10.7 (Lion).

There is no need for any driver installation for the MindLights®.

You need at least Java™ 6 to install or start the software. Use the apple software update tool.

You can start the MindLights® Software directly from the USB stick using the »Start.app« shortcut for the file »Start.app« in the folder: start/Mac/Start.app

If you start the software directly from the USB stick the folders »musics« and »sessions« on the USB stick are the sources for music files and sessions and your own sessions will be saved there.

If you install the software, which is recommended for best performance, just use the file »Install.dmg« on the USB stick.

In a local installation your own sessions are stored in the folder »Home/MindLights Sessions«.

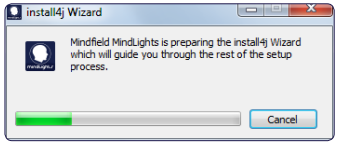
To de-install the software just drag the software icon to the recycle bin (Mac standard).

2.1 Software- and Driver unit Installation of the Mindlights® for Microsoft™ Windows™

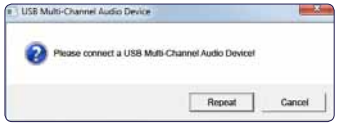
! IMPORTANT before starting the installation: Only connect the Mindlights® to the USB-port of your PC after the software requests it during installation!

1. Turn on your PC. If you have more than one user account chose the one that has administrator status. Connect the Mindlights® USB-stick to a free port of your computer!

2. On the USB stick you will find a file labeled »Install.exe«. Double click on the file. The software installation starts and the driver unit of the Mindlights® is installed too. Be sure to activate the check mark in the box.


install4j Wizard
Mindfield MindLights is preparing the install4j Wizard which will guide you through the rest of the setup process.
Cancel

3. The driver unit will now ask you to connect a »USB Multi Channel Audio Device« to your PC. These are the Mindlights®. Please connect the USB-plug of the Mindlights® to a free USB-port of your PC now. Then click on »retry«.



4. After the successfull installation of the driver unit you will have to restart your PC! You should not start the MindLights Software before this restart.

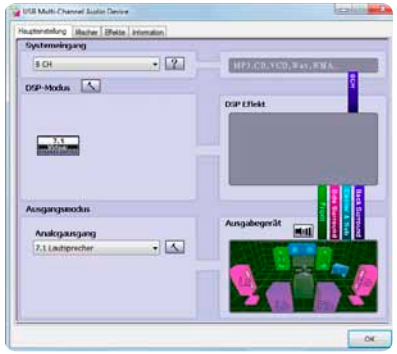
! Important notice: The driver unit will only be installed to the current USB-port of your PC. If you disconnect the Mindlights® from your PC and then reconnect them for another session on a different USB-port, you will have to install the driver unit again for this port. We therefore recommend always using the same USB-port! You can also install the driver unit seperately. To do that you have to execute the file »setup.exe« which can be found in the subdirectory »driver« on the USB-stick.

The installation of the software is not necessary. You can operate the software directly from the USB-stick. In the primary directory there is a file labeled »Start.exe«. Double click on this file. The software is now loaded directly from the USB-stick and your sessions will be automatically saved to the folder labeled »sessions« on the USB-stick.

2.2 Soundcard Configuration (only for Windows™)

After you have successfully installed all of the components and restarted your PC, you will see the following symbol in your taskbar:

Double-click on the symbol and the configuration window imaged to the right, will open.



At the top left side of the window you will find a setting labeled »Systemeingang(System input)« which is still preset to 2 CH after the driver unit installation. Please change this option to 8 CH. From now on, the MindLights® are triggered correctly.

Confirm your command by clicking on »OK«.

Explanation: The MindLights® act like an external soundcard of your PC. As soon as the MindLights® are connected to the PC, they are defined as the standard souncard with windows. For example, if you listen to music or watch a video during the time when the MindLights® are still connected, you will hear the sound coming from the headphones of the MindLights®. If you disconnect the MindLights® from the USB-connection your normal soundcard will again act as standard soundcard. Music and other audio files will then playback over the existing soundcard.

> **!** In addition, the software will try to execute this operation automatically, provided that you have logged in via administrator account. In this case you do not have to execute the soundcard configuration.

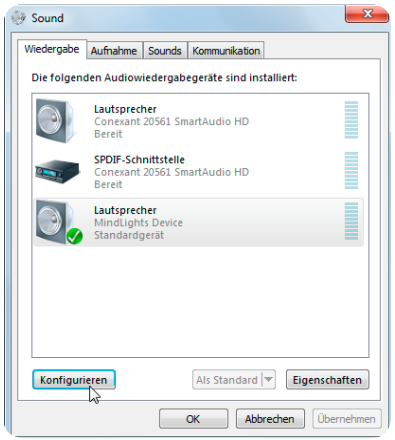
Connecting the Headphones

Then you can connect the stereo-jack-headphone plug to the provided jack-input of the MindLights® LED-mask. Hard- and software of the Mindfield MindLights® are now ready to operate and you can make yourself familiar with further content of this manual.

Optional: Alternative Setting of the MindLights® to 8 Channels

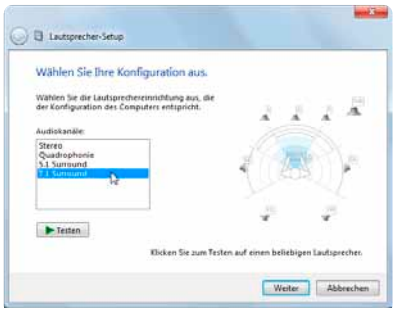
Alternatively you can also change the MindLights® to 8 channels (8 CH) via the Windows Settings. To do that go to the utility of the »USB Multi Channel Audio Device«.

Navigate through the control panel of Windows untill you reach the option »manage audio devices« (in category hardware and sound). For this example we have used Windows 7. (Here you can also see and alternate which soundcard is set to standard souncard). Click on configurate if the MindLights® are highlighted. (top image)



Change the audio channels to »7.1 Surround« in the configuration window (lower image) This is equivalent to the 8 CH in the configuration window of the »USB Multi Channel Audio Device«.

Confirm the command via »Next« and leave all further settings as they are.



2.3 Software Updates

As soon as the software starts it automatically searches for updates and newer versions of the software.

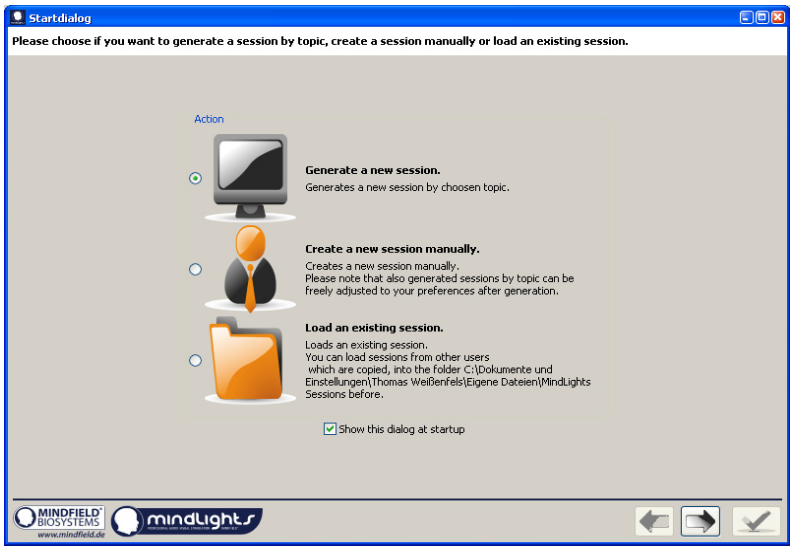
In order for the software to conduct this search, your PC has to have a working internet connection. Should this be the case you will be provided with the following hint: »A new version of this software is available, and can be downloaded free of charge on our website www.mindfield.de . Our website also provides further information regarding this subject.«

3. Handling the MindLights®

Starting the Program

If you have chosen to create a desktop icon during the installation process, you can now start the software with a click on this icon! You can find the start option in the Windows(tm) Start Menu as well. Furthermore there is a shortcut on your desktop to start a demo session.

After starting the software you will see the following startup menu:


Startdialog
Please choose if you want to generate a session by topic, create a session manually or load an existing session.
Action
Generate a new session.
Generates a new session by choosen topic.
Create a new session manually.
Creates a new session manually.
Please note that also generated sessions by topic can be freely adjusted to your preferences after generation.
Load an existing session.
Loads an existing session.
You can load sessions from other users which are copied, into the folder C:\Dokumente und Einstellungen\Thomas Weißenfels\Eigene Dateien\MindLights Sessions before.
Show this dialog at startup
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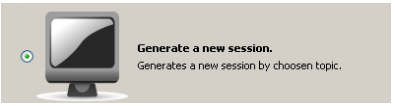
You now have the following 3 options:

1. Automatic Generation of a new Session (p.15)
2. Manual Generation of a Session (p.26)
3. Loading an existing Session (p.42)

4. Automatic Generation of a New Session

By clicking on the following button you will be guided to the subject selection.



Step 1: Choosing a Topic

The following window opens:

Generator of sessions - Step 1: Choose topic
Please choose one of the following topics and confirm your choice.
Topic
Description
Deep relaxation
Experience a deep relaxation through stimulation of lower alpha and theta waves. This sessions brings you slowly down to theta and in the end little upwards again to low beta.
Better sleep
A stimulation of the delta and sub-delta frequency band can help with sleeping disorders. Studies have also shown clinical improvements for patients with Fibromyalgia (Berg et al., 1999). In some cases this session can also help with anxiety disorders. The main part of the stimulation is between 0,2 Hz and 4 Hz. You should only use these sessions in the evening or at night to not disturb your natural sleeping rhythem.
Improve your mental power
An improvement of mental power can be achieved using a stimulation in the lower beta and beta band as it corelleates with attention, concentration and cognitive processes. The brain increases attention and arousal, also the consume of energy increases. This sessions are used best in the morning after getting up.
Improve cognitive function in the elderly
With increase of age we loose our cognitive power and flexibility by nature. As a first sign you find less blood fluctuaction and an increase of theta amplitudes allover the brain. (Hagstadius and Risberg, 1989; Gur, et al., 1987; Prichep et al., 1994) Through a broad stimulation in the beta band with huge variation over time you can increase arousal and cognitive power in the brain. This is already shown in a study from Budzynski et al., 2007.
Training of concentration for
AD(H)D stands for attencion deficit (hyperactivity) disorder. This disorder starts often in childhood and can have many faces. Using a focused stimulation of low beta
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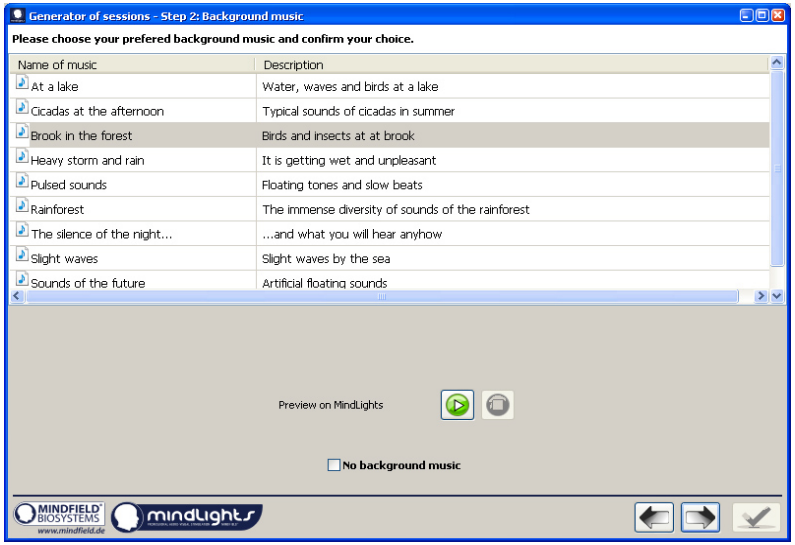
Now you can choose your individual subject via mouse-click. More information on each subject is available in the respective description.

After you have choose your topic, please confirm your choice by clicking on the arrow and choose a background music that suits you.

Step 2: Choosing the Background Music

The following window opens:


Generator of sessions - Step 2: Background music
Please choose your prefered background music and confirm your choice.
Name of music
Description
At a lake
Water, waves and birds at a lake
Cicadas at the afternoon
Typical sounds of cicadas in summer
Brook in the forest
Birds and insects at at brook
Heavy storm and rain
It is getting wet and unpleasant
Pulsed sounds
Floating tones and slow beats
Rainforest
The immense diversity of sounds of the rainforest
The silence of the night...
...and what you will hear anyhow
Slight waves
Slight waves by the sea
Sounds of the future
Artificial floating sounds
Preview on MindLights
No background music
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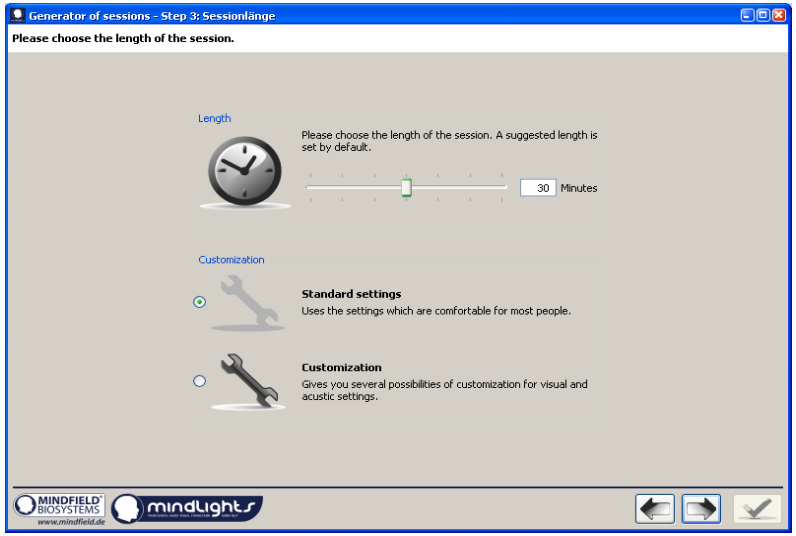
Please make sure that you have connected your headphones. Now you can choose a music track and then play it by clicking on the »Play« button. By clicking on »Stop« you can terminate the playback of the track.

If you do not wish to integrate a piece of music into your session, simply set a check mark in the box labeled »No Background Music«.

After you habe chosen and verified your piece of music proceed to the next part of the menu.

Step 3: Choosing the Duration of a Session


Generator of sessions - Step 3: Sessionlänge
Please choose the length of the session.
Length
Please choose the length of the session. A suggested length is set by default.
30
Minutes
Customization
Standard settings
Uses the settings which are comfortable for most people.
Customization
Gives you several possibilities of customization for visual and acustic settings.
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In this part of the menu you can first of all choose the duration of your session. By sliding the controller the duration can be adjusted to your personal demands. The standard preference which has proven to be 30 minutes for most people is already activated.

In order to benefit from the session we do not recommend sessions that last less than 10 minutes.

Step 4: Setting up the MindLights®

During this part you can choose between the options standard settings and parameter adjustments.

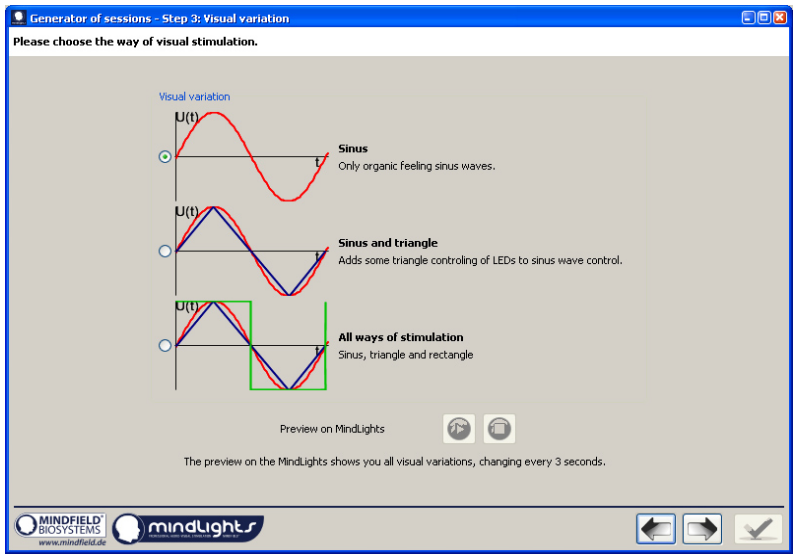
The standard settings are subject related preferences that are optimal for most people. **If you do not wish to make individual adjustments, confirm your selection. This will guide you to the last window of the session generator** (look up p. 24 / step 12: review)**.**

If you do want to make individual adjustments please chose the other option »Paramter Adjustments«.

Step 5: Adjusting Parameters

With the following steps you can further individualise your session. They are not mandatory though. If you do not wish to make any further adjustments then simply choose the standard settings.

This is the first menu that opens for parameter adjustments:


Generator of sessions - Step 3: Visual variation
Please choose the way of visual stimulation.
Visual variation
U(t)
t
Sinus
Only organic feeling sinus waves.
Sinus and triangle
Adds some triangle controling of LEDs to sinus wave control.
All ways of stimulation
Sinus, triangle and rectangle
Preview on MindLights
The preview on the MindLights shows you all visual variations, changing every 3 seconds.
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Step 6: Choosing the Light Stimulation

You can choose between a sinus-shaped, triangle-shaped and rectangle-shaped variation of light intensity. Please use the preview function within the software (»Play« button) to see the differences between the different variation patterns.

Put on the MindLights® LED-mask which is included in delivery and watch the different light stimulations. If you wish to experience all of the various light stimulations during a session, click on the last button labeled »All Light Stimulations«

Step 7: Choosing the Color Variation

Generator of sessions - Step 4: Color variation
Please choose your prefered colors and way of visual stimulation.
Color variation
Only primary colors
Colors fitting to topic are choosen by us.
Primary and secondary colors
Uses also colors which are derived from primary ones.
All colors
Uses all posible colors of the MindLights.
Preview on MindLights
The preview on the MindLights gives you a 30-minute session, which is compressed to one minute.
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In this part of the menu you can choose a set of predefined colors for your session.

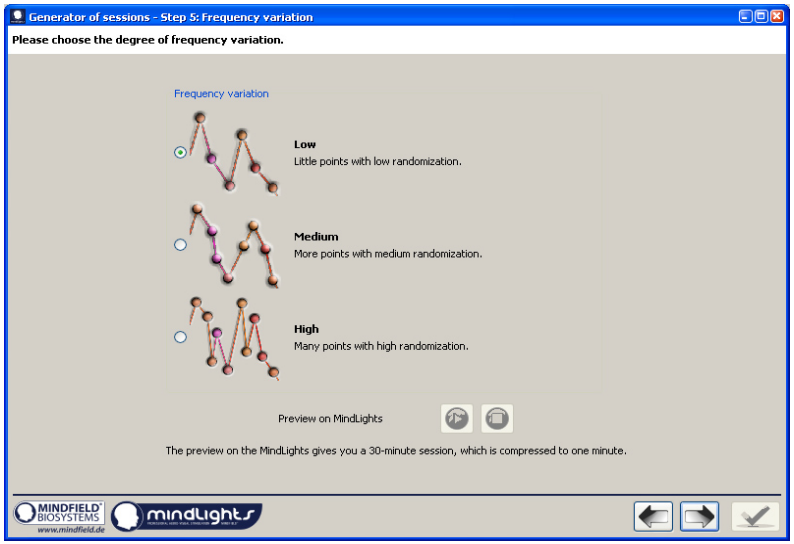
- Option »Primary Colors«: Only a few, subject related and predefined colors will be utilized
- Option »Secondary Colors«: Similar colors will be added to the subject related primary colors
- Option »All Colors«: All colors which can be generated by the LEDs will be used (e.g. green or a very bright pink)

The selection of colors for the subjects was influenced by classical of color theory and by experiments of their effects on the human electroencephalogram[3]. Principally, colors like green and yellow have a comforting effect and colors like blue, white, and red (signal color) have agitating effects. However, this can be perceived differently from person to person. Therefore you can always change the colors to your preferred colors - even during automatically generated sessions.

3. Raza et al (2005) A critical analysis of chromo therapy and its scientific evolution

Step 8: Choosing the Frequency Variation

In the section labeled Frequency Variation you can influence the intervals of audio-visual stimuli during the session. You have the choice between three frequency variation levels: low, medium and high level of frequency variation.

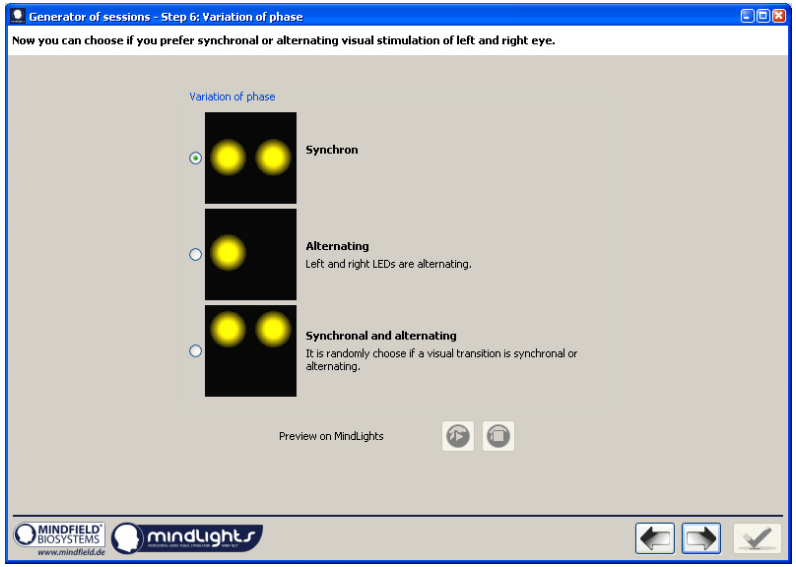

Generator of sessions - Step 5: Frequency variation
Please choose the degree of frequency variation.
Frequency variation
Low
Little points with low randomization.
Medium
More points with medium randomization.
High
Many points with high randomization.
Preview on MindLights
The preview on the MindLights gives you a 30-minute session, which is compressed to one minute.

Frequency variations

- If you would like to experience a relaxative session we recommend the selection of a low frequency variation. This means that there will be longer time periods inbetween the frequency markers, resulting in longer time periods for changes in stimulation frequency and color.
- For the brain to receive a more diversified and stimulating session, we recommend a medium level of frequency variation. More markers will be implemented and there will be more audio-visual shifts.
- For the area of performance improvement, we recommend a high level of frequency variation. The session will include a lot of shifts in audio-visual stimulation.

> **!** Please make sure to consider your personal intentions for the session, before selecting your subject. Your goal should match the selections you make here!

Step 9: Phase Variation


Generator of sessions - Step 6: Variation of phase
Now you can choose if you prefer synchronal or alternating visual stimulation of left and right eye.
Variation of phase
Synchron
Alternating
Left and right LEDs are alternating.
Synchronal and alternating
It is randomly choose if a visual transition is synchronal or alternating.
Preview on MindLights

The MindLights® LED mask includes integrated LED diodes. These diodes are aligned in a horizontal line.

Option »Synchronous«

All LEDs light up at the same time, the right and left eye are visually stimulated synchronously.

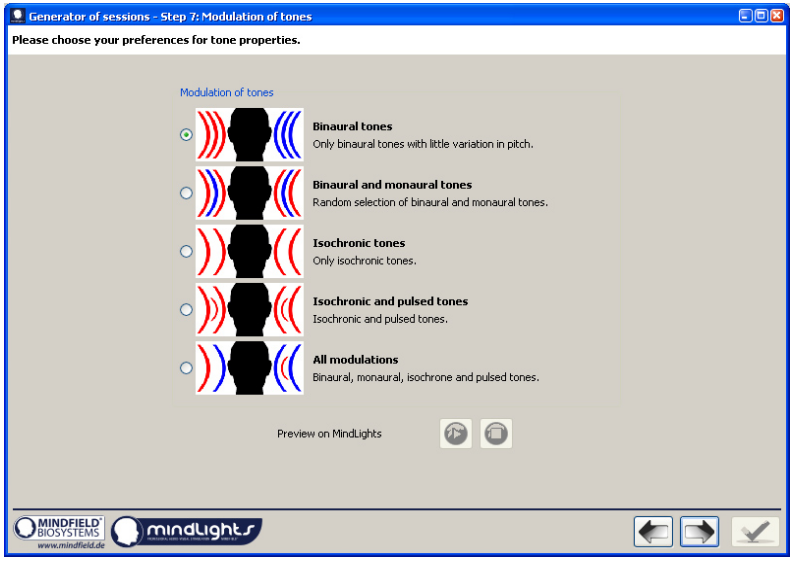
Option »Alternating«

The left and right eye will be stimulated reversely.

Option »Both«

The software randomly generates phases of alternating and synchronous stimulation within the session.

Step 10: Acoustic Variation


Generator of sessions - Step 7: Modulation of tones
Please choose your preferences for tone properties.
Modulation of tones
Binaural tones
Only binaural tones with little variation in pitch.
Binaural and monaural tones
Random selection of binaural and monaural tones.
Isochronic tones
Only isochronic tones.
Isochronic and pulsed tones
Isochronic and pulsed tones.
All modulations
Binaural, monaural, isochrone and pulsed tones.
Preview on MindLights
MINDFIELD BIOSYSTEMS
www.mindfield.de
mindLights

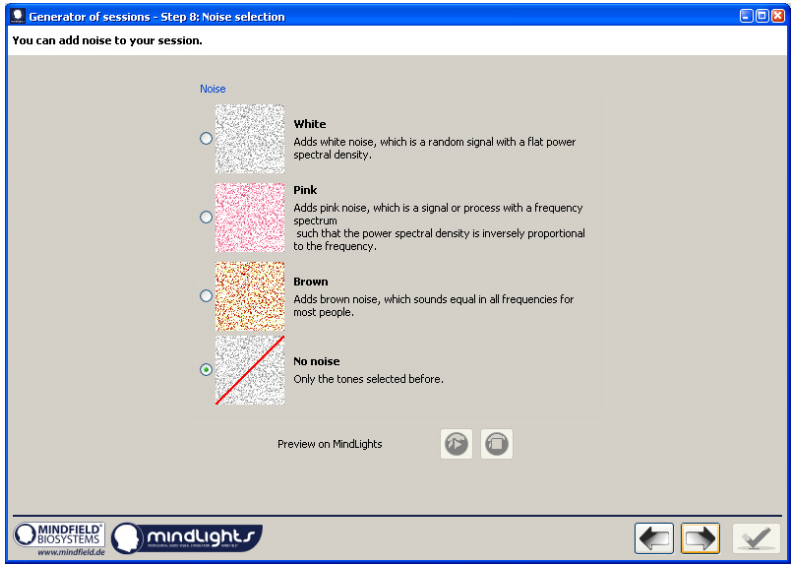
Binaural / Monaural Sounds represent sounds that are created by the brain, due to slightly different frequencies applied to each ear. When trying to process these sounds, the brain creates an acoustic »beat« interference sound.

Isochronal Sounds are probably the most effective way of stimulating the brain. An isochronal sound consists of a series of several beats that sound to a special frequency. This sound stimulates the brain very effectively because it arises and also fades away very rapidly.

Pulsed Sounds The option pulsed sounds creates a session that alternates between muting and elevating the volume of the tone which creates the perception of a pulsating sound that gains in volume. In an environment with background noise, pulsed sounds are easier to perceive.

The different options differ in subjective effectiveness, so we recommend that you experiment with all of them and find the option that best suits you.

Step 11: Noise


Generator of sessions - Step 8: Noise selection
You can add noise to your session.
Noise
White
Adds white noise, which is a random signal with a flat power spectral density.
Pink
Adds pink noise, which is a signal or process with a frequency spectrum such that the power spectral density is inversely proportional to the frequency.
Brown
Adds brown noise, which sounds equal in all frequencies for most people.
No noise
Only the tones selected before.
Preview on MindLights
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White Noise

White noise consists of all the frequencies of the audible range which stretches from 16 Hz to 20 kHz. Within this range all the frequencies have the same sound level. We experience white noise in the form of a »hissing«, since our ears are more sensitive to high frequency sounds than to low frequency sounds. White noise is usefull during treatment of tinnitus or migraine.

Pink Noise

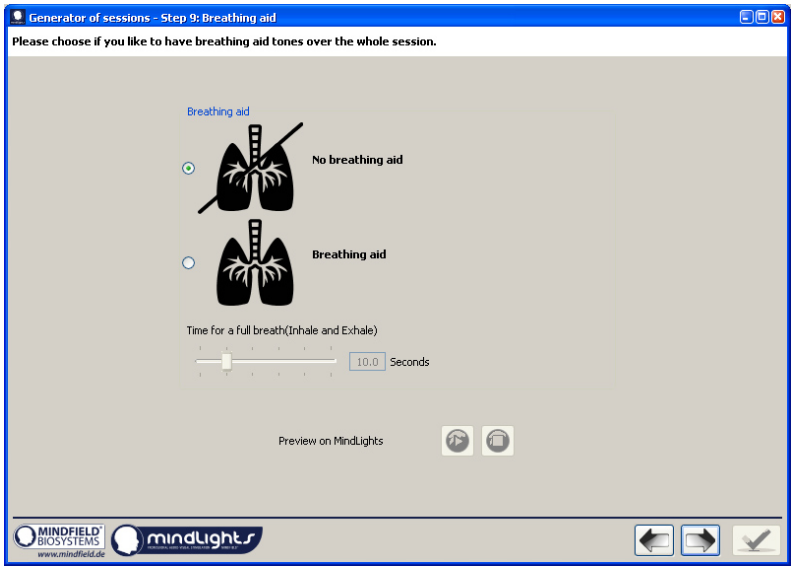
Pink noise, also called 1/f noise is a sort of noise that decreases in intensity as the frequency rises. It is adapted to the human sense of hearing.

Brownian Noise

Brownian noise is a »dark sounding noise« that reminds of a waterfall or a thunder strike. It sounds the same for almost all people.

Please use the preview function within the software!
This will help you to make a decision in composing your session.

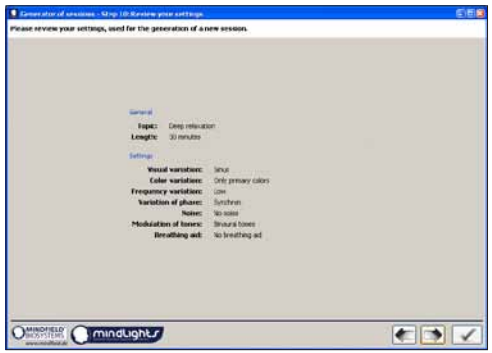
Step 12: Respiratory Support


Generator of sessions - Step 9: Breathing aid
Please choose if you like to have breathing aid tones over the whole session.
Breathing aid
No breathing aid
Breathing aid
Time for a full breath(Inhale and Exhale)
10.0
Seconds
Preview on MindLights
MINDFIELD BIOSYSTEMS
mindLights

Your session can be enhanced through an audio track of a breathing sound. You will find more information regarding this subject on page 37 of this manual.

Step 13: Checking the Settings

Before the session starts you can see the most important settings in an overview. If you do not wish to make any further changes, you can now start your session.



Step 14: Final Adjustments of Luminance and Volumes

You now have a final chance of adjusting all acoustic and visual settings of the MindLights® LED-mask and the headphones.

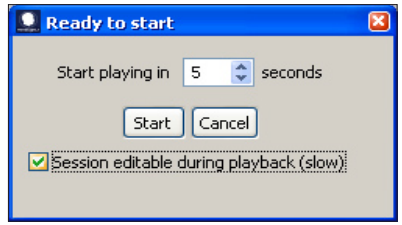
Just listen to and look at your preferences and change them by dragging the sliders. When you have finished, confirm your selection with a check mark. Your session will now begin!

Step 15: Start Playback of the Session

After you have clicked on the check mark, the MindLights® window opens.

When you click on the play button to start the session, another small window opens.

You can now chose a countdown for the moment you want to start the session. After you have entered the number of seconds, click on the start-button below.



You now have enough time to put on your MindLights® LED-mask and the headphones. The session starts at the time you have set the countdown.

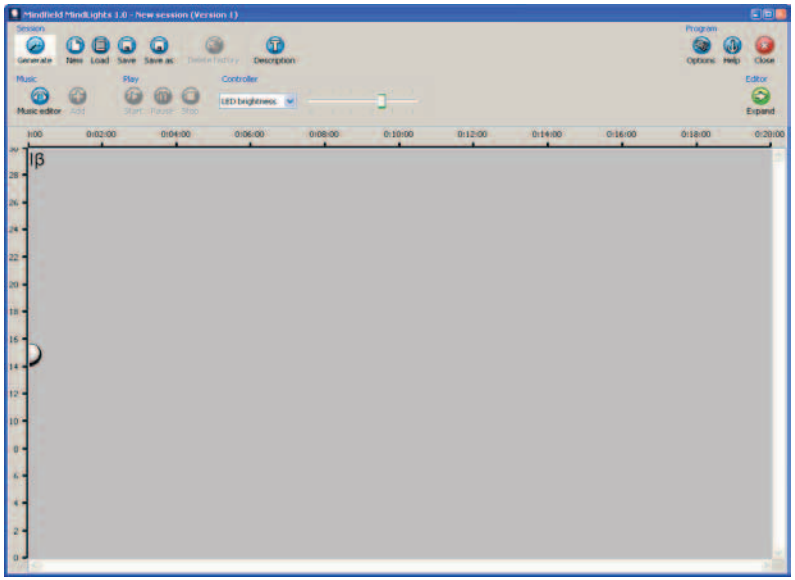
The MindLights® team now whishes you an exciting journey into the world of audio-visual stimulation!

5. Manual Generation of a Session

This chapter will provide you with an in depth overview of the MindLights®. The following information will allow you to manipulate the predefined sessions or create your own.

When you are looking at the main menu, click on »manual generation of a session« and confirm your selection with a check mark.

The startup window opens. Don't be startled by an empty, gray surface. You will later be able to set your own frequency markers. The following options are already included in this window:



This canvas will open, once you have clicked on »manual generation of a session« (image on page 14) or on the »New« button.

5.1.1 Session

Generate

Generates a subject-related session. This selection will guide you to the session generator (page 15).

Load a Session

This will open previously saved sessions. A window opens which allows you to chose and load a session (page 16).

New

This option creates a new session. An empty, gray canvas shows up, allowing you to set your own frequency markers.

Save / Save as

You can save your current session by clicking on the »save« button or you can save your sessions under a new name.

Delete History

You can reduce the file size of your session by eliminating the buffer storage of the current session. This will only save the current version and the required disk space decreases. Caution: Former versions of the session can not be restored after deleting the history.

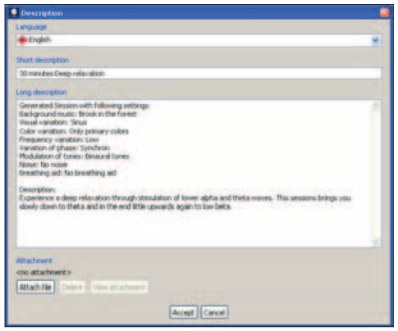
5.1.2 Playback / Information

Playback / Stop / Pause

These buttons allow you to play, stop and pause the session (images from left to right).

Information

By clicking on this button you will open a context menu, that contains information regarding the current session. You can change and / or enhance this information with your own data. If you have composed your own session, you can create the corresponding description here.



| Description and informationen about Sessions

You can also add a file to the information, e.g. a PDF-file containing further information. You can write down the information in various languages.

5.1.3 Music

Opening the Music Editor

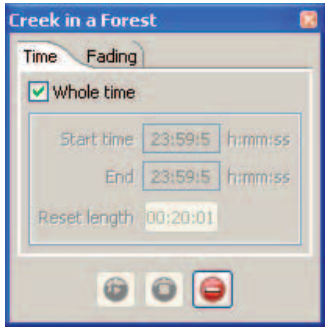
By clicking on this button you can add your own audio track to the session. The following button will appear:

Add an Audio Track

The explorer window appears and you can chose an audio file, either from the MindLights® library or your own library.

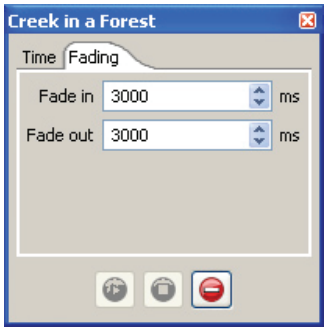
After you have selected your track it will appear in the MindLights®.

The surface of the MindLights® now has a slightly grey hue and the title of your track is displayed. Now simply click on any spot in the canvas and the following info-window will appear:



The track can be played back at full length or at a defined length by setting in- and out points.

Alternatively, you can change the duration by clicking and dragging with the mouse on the frame.



The »Fading« allows you to adjust the parameters.

The volume of your audio track will then be faded smoothly, so that there will be a nice transition from one track to a another.

5.1.4 Master Control / Other Program Buttons

The following main controller will allow you to adjust the individual luminance and volume of all the elements included in the session.

Before the session starts, you can adjust all of the audio-visual effects here. This allows for an individual composition of the session. The effects can also be changed throughout the session. Your can save the position of the controllers for a specific session. To do this, you must have chosen „advanced editing" in the „options" menu. When you load a session now, you can choose in the options menu how the previous controller positions shall be treated (ask, ignore, use always).

Options

Click on this button to make any global changes, such as language, maximum frequency, switch start menu on / off, acoustic transitions and fade in / out durations.

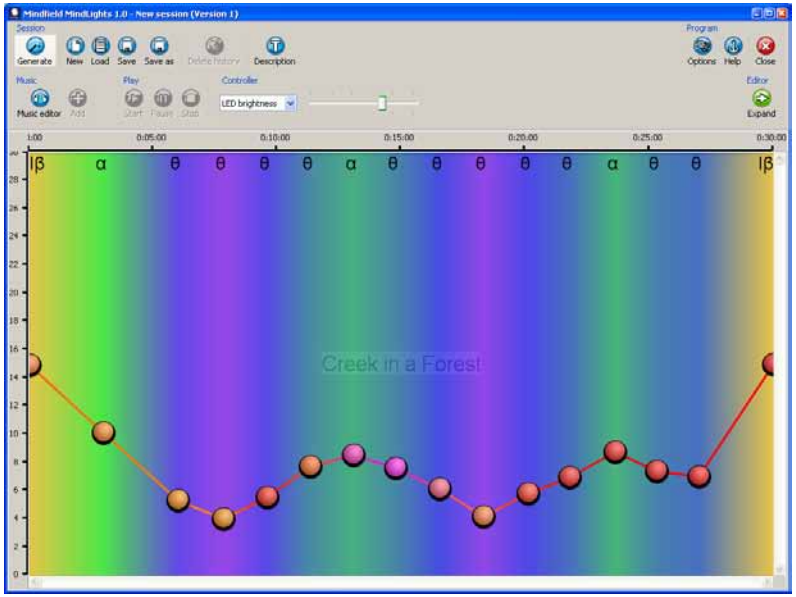
Help

The manual is provided in PDF format.

Quit

Click on this button and the MindLights® software quits. The program will ask if you wish to save your current session and then close automatically.

5.1.5 Editor Functions



Extend

By clicking this button, you can extend the duration of the session. A session has a maximum duration of 2 hours.

Zoom Function

Click on the timeline and mark an area of it by dragging the mouse cursor and releasing it on the desired end position.

The selected area will now be displayed at a larger zoom level and show a slight color change. You can then navigate through the session with the scrollbar. Double-click on the timeline to zoom out to normal scale again.

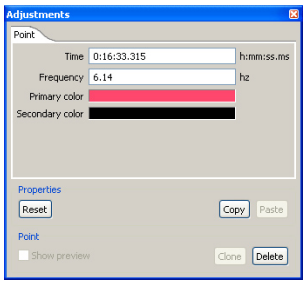
5.2 Placing / Editing of Frequency Markers

The MindLights® allow you to create your own personal sessions. These consist of many individual frequency markers.

These frequency markers represent key frames which trigger an audio-visual shift within the session. You can now determine when and how these shifts will happen in your session. The following parameters can be adjusted:

5.2.1 Time and Frequency

Click in any area of the canvas to set your first frequency marker. The marker will start to blink. Click and drag on the marker to move it around anywhere on the surface.



The following window shows how particular parameters, such as time and frequency, dynamically adjust according to your commands.

The time- and frequency parameters can either be adjusted by clicking and dragging the markers, or by manually entering the desired values. More information on certain wave frequencies and their effects can be found on page 40-41.

5.2.2 Primary / Secondary Colors

You can click in the two color fields to open the color-picking window. Now you can choose which colors shall be used for stimulation at this point of the session.

If your primary and secondary colors are the same, you will only see one color. The »reset« button will set the colors back to black and white. They can then be redefined according to your adjustments.

5.2.3 Deleting Frequency Markers

Select an existing frequency marker and then click on the »delete« button in the preferences window.

5.2.4 Copying a Color Selection

When you have selected your own primary and secondary color you can easily save your adjustments by clicking in the »copy« field. The parameters will be transferred by clicking on another frequency marker and then clicking the »paste« button.

5.2.5 Preview Function

After you have made all your desired adjustments for time, frequency and colors, you can check them again.

Activate the preview function by clicking in the »preview« box. (page 32 image at the top left).

Put on the MindLights® LED-mask and the headphones and look at your audio-visual adjustments. In addition, you can adjust every parameter with the main controller in the canvas. When you are pleased with your preferences you can set your next frequency marker. This work pattern can be repeated all the time.

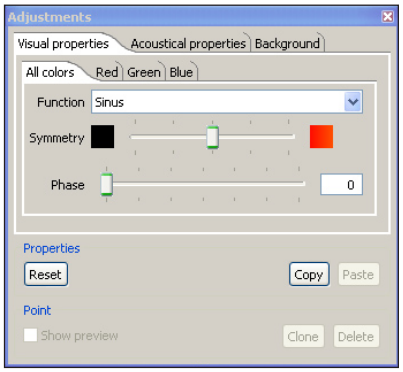
By activating the preview function, it will stay on for all following markers. The LED's will flash slower though. If you want to see the chosen frequency in the preview, just click in the field where you can enter the frequency with your mouse, while the preview is playing.

> **!** Frequency markers can also be edited in predefined demo- / or subject related sessions.

5.3 Editing Transitions

There will always be a transition between two frequency markers. Basically, the software will try to smoothly interpolate the differences in frequency and color. These transitions are displayed in the form of lines. Click on this line and the editing mode will be activated. For your easy orientation, the transition will then be portrayed blinking, just as with a frequency marker.

After clicking on the line, the following window will appear. We will now explain all of the included functions:



5.3.1 Visual Transition

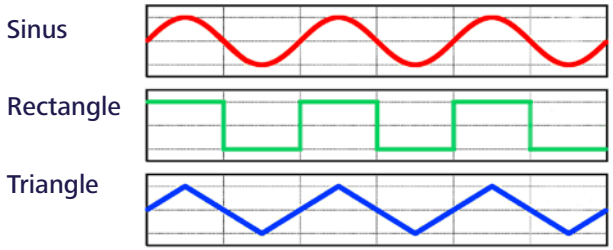
Transitions between frequency markers can be interpolated with all colors and the primary colors red, green and blue. You can use the preview function to try the different styles and chose the one that suits you best.

Copying Transitions

You can save your adjustments by clicking on »copy«. The parameters will be pasted to another transition by clicking on »paste«. All adjustments that you have made will be copied.

5.3.2 Function / Waveforms

The integrated LED-lights can perform the visual stimulation through three different waveforms. The following waveforms can be selected in the window »function«:



5.3.3 Symmetry

The symmetry (weight) of a primary color to its secondary color can be adjusted with a slider. The emphasis of which color is displayed at what point in time can be changed for every single transition between frequency markers.

Just move the slider to the desired composition of the color spectrum between frequency markers.

5.3.4 Phase

This slider can be used to generate time-shifted visual stimulation for the left and the right side. A phase angle of 0 stands for synchronous stimulation of the left and the right side, while 180 stands for exactly alternating stimulation. The values in between are intermediate time-shifts between these two extremes. See also page 21 (phase variation).

5.3.5 Acoustic Transition

This tab allows you to create your own acoustic transitions.

By clicking on »function« you can chose monaural, binaural, isochronic or pulsed sound stimulation patterns.

An explanation of the various audio frequencies can be found on page 22.

Each and every sound sound stimulation pattern has three possible adjustments that can be made.

- Base frequency: Determines the sound frequency between 20Hz and 1000Hz. It is used for generating a different sound between the tones for the left and the right ear.
- Modulation depth: Here, modulation describes the preintended transition between one key and another. This function is only available for pulsed sounds.
- Phase: This function allows you to incorporate a phase from 0-180 into the various audio frequencies.

5.3.6 Background Noise and Breathing Patterns

An explanation on the various forms of noise can be found on page 23.

Apart from the visual and acoustic transitions, there is another acoustical function that helps the user during the session.

First of all, you have the opportunity to incorporate a background noise at specific markers. There is white, pink and brownian noise available, where the „colors" denote certain frequency distributions that sound differently. Of course you also have the opportunity to switch off this function. Another stimulating but also calming influence is the individually manageable training of breathing patterns.

Breathing Patterns

According to a lot of clinical studies, slow and smooth breaths has a calming effect on the autonomous nervous system, but also on the sympathetic and parasympathetic (parts of the vegetative nervous system) nervous systems. Current studies show that the right breathing techniques increase heart rate variability (HRV).

At rest and relaxation the HRV turns into heart coherence (optimal synchrony between rhythm of heart beat, breath and blood pressure). The body can regenerate very efficiently. This condition can be trained and faciliated intentionally.

As clinical studies have proven, the heart rate increases while a person inhales, and decreases as the person exhales.

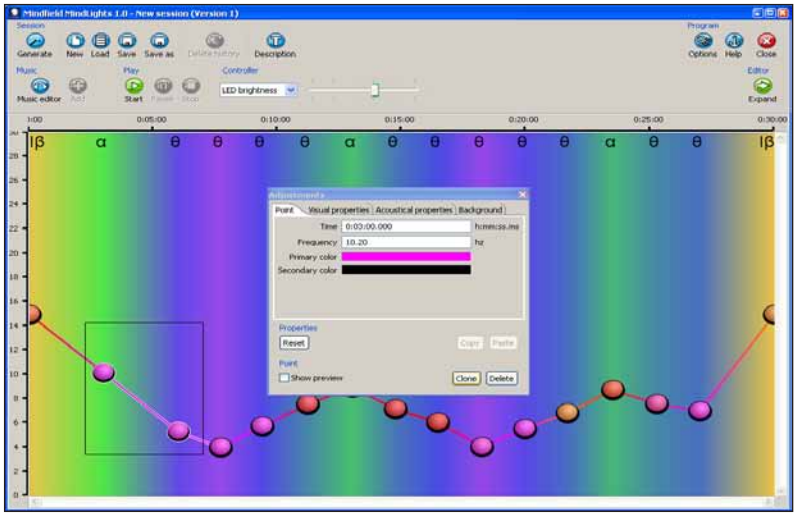
It has also been proven that long and smooth breath cycles lasting approx. 10 seconds provide the most benefits. This would result in 6 breath cycles per minute.

You should fully inhale AND exhale during the whole session. The rhythmical breathing sounds can guide your breath pattern.

In order to increase your heart rate variability, we recommend you train with a breath cycle of 10 seconds!

Activate the breath training and then adjust the desired rhythm with the slider!

5.4 Adjusting and Cloning of Frequency Markers



Adjusting the Frequency Markers

Click and hold down your mouse button, then drag a frame around the markers in the canvas which you want to copy. Then click on any area inside the frame and move it to the desired location. With this procedure you can position and edit the markers at the same time. Click in the canvas again to deselect the frame and proceed with other adjustments in the same manner.

Cloning of Frequency Markers

If you wish to copy frequency markers, again create a frame around them and chose the function »copy« from the frequency setting window. After confirming the process, the markers that you have selected before now appear to the right of the frame.

This procedure can be repeated as often as you like.

Change between frequency markers and transitions

When you have selected a single marker or transition, you can step forward to the next marker/transition by pressing »Tab« and backwards by »Shift + Tab«.

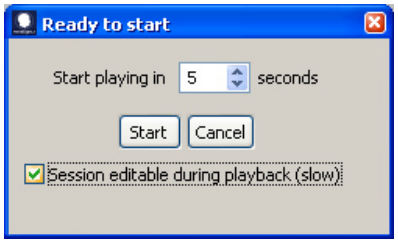
5.5 Fast Forwarding during a Session

At the point when you have created your own session, you have the opportunity to rewind or fast forward within it.

You can click, hold and drag the fast forward bar within the composition towards the start or the end of the session. It is visible the entire time.

5.6 Manipulating a Session during Playback

During playback of a session you have the possibility of directly manipulating the various frequency markers. This will help you to create more professional sessions and will save time. This option has to be activated at the start of the session and should only be selected, when you will actually change the parameters. This will put higher demand on your computer's performance ressources.



5.7 Extended editing mode

You can activate the extended editing mode in the options menu. It provides you with the following extras:

a) Background grid for exact positioning of markers

b) Setting a timed starting point for the session (e. g. to skip certain parts while testing)

c) Time scale in milliseconds for exact positioning while playing

6. Information on Wave Frequency Areas

The left side of the canvas will show a frequency scale (image on page 38). It ranges from 0 Hz - 30 Hz. Generally, the various frequency waves will be displayed in terms of color.

When you click on a frequency marker within the canvas and move it to the higher Hz-area, the background color of the canvas will change its color accordingly.

You can obtain information on the particular frequency areas by opening the PDF documents with the taskbar. Every frequency area has a greek alphabetic character. When you drag a frequency marker to a higher frequency range, the color of the canvas and the greek letter change automatically.

Delta Frequency range (0 to 4Hz): σ

Use frequency markers from 0 to 4 Hz for the following:

- Deep relaxation
- Meditation
- Insomnia
- Pain reduction

Theta Frequency range (4 to 8 Hz): θ

Use frequency markers from 4 to 8 Hz for the following:

- Deep relaxation
- Stress reduction
- Meditation
- Insomnia
- Hypnosis
- Day dreaming
- Hypagnogic consciousness (Drifting to a sleeping state)

Alpha Frequency range (8 to 12Hz): α

Use frequency markers between 8 to 12 Hz for the following:

- Deep relaxation
- Meditation
- Learning and memory training

Low Beta Frequency range (12 to 18 Hz): Iβ

Use frequency markers between 12 to 18 Hz for the following:

- Training of attention
- Improvement of learning and memory
- Relaxed and focused attention
- Locomotory damping
- Help with insomnia (Hauri, 1982)

Beta Frequency range (18 to 24 Hz): β

Use frequency markers between 18 to 24 Hz for the following:

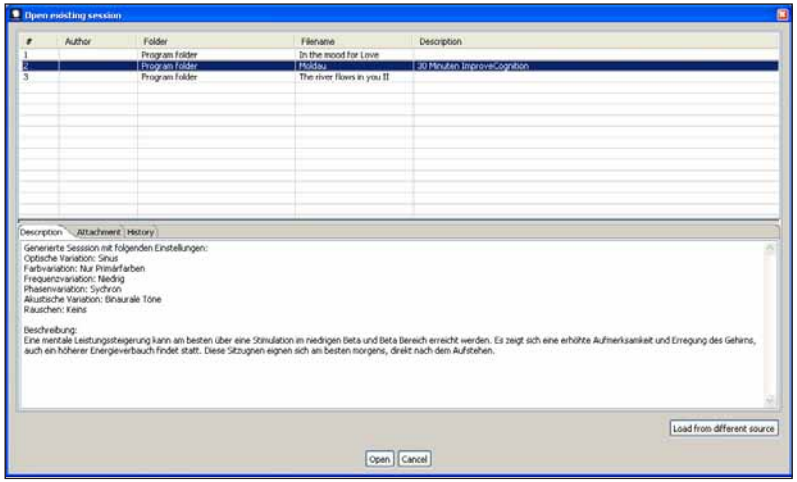
- Activation
- Performance improvement
- Attention training

Higher Beta Frequency range (24 to 30Hz): hβ

Use frequency markers between 24 to 30 Hz for the following:

- Strong activation
- Strong stimulation
- Stress induction

7. Loading an Existing Session


Open existing session
Author Folder Filename Description
1 Program Folder In the mood for Love
2 Program Folder Moldau 30 Minuten ImproveCognition
3 Program Folder The river flows in you II
Description Attachment History
Generierte Session mit folgenden Einstellungen:
Optische Variation: Sinus
Farbvariation: Nur Primärfarben
Frequenzvariation: Niedrig
Phasenvariation: Sychron
Akustische Variation: Binaurale Töne
Rauschen: Keins
Beschreibung:
Eine mentale Leistungssteigerung kann am besten über eine Stimulation im niedrigen Beta und Beta Bereich erreicht werden. Es zeigt sich eine erhöhte Aufmerksamkeit und Erregung des Gehirns, auch ein höherer Energieverbauch findet statt. Diese Sitzugnen eignen sich am besten morgens, direkt nach dem Aufstehen.
Load from different source
Open
Cancel

If you want to load a demo session or your individual saved session, you can do this by clicking on »generate« or the »load« button in the start window of the MindLights®.

When you have stored your own sessions, they will be saved to the folder labeled »sessions« if you have started the software via USB-stick.

At every automatic storage point, the current state of the composition will be saved as an independent version of the session. This will allow you to navigate to specific levels of the composition.

When the software is installed, the sessions can be found in the folder »MindLights Sessions«, which is located in the generic Windows™ folder for user data (like »My Documents«).

If you have received sessions from other MindLights® users, you can copy them to this folder and then open them with your own MindLights®.

Just click on the desired session and confirm your selection.

Details for Advanced Users

Please use the professional capabilities of the MindLights® software, in order to create exciting sessions. There is no other product with which you have so many possibilities in creating and sharing your own sessions.

You can manipulate predefined sessions in every detail, or simply create new ones. The audio tracks you have used are included int the session file ».mlt«. Therefore, you only have to copy one single file, if you wante to share your sessions with someone else. You can start a session directly when loading the Mindights EXE file by adding the parameter »-open [filename]«.

All elements, such as the driver unit, the MindLights® software, the audio tracks and the sessions are included on the USB-stick. You can easily duplicate and share the stick, for example, if you want to lend them to a friend. The USB stick must be named »MindLights Software«, though.

We thoroughly support the exchange of sessions between users, in specific cases even the selling of special sessions.

8. Brief Description Button Functions

	Generate session
	Open an existing session
	Create a new session
	Save the session
	Delete History
	This function allows you to go back in the menu
	This function confirms your selection
	Confirms the entire selection of a session, opening of the canvas
	Information symbol for choosing the duration of the session
	Choice between standard and individual parameters

	Creation of a new session
	Extending the session to max. 2 hours (keyboard shortcut X)
	Playback of a session
	Pausing the session (keyboard shortcut V)
	Halting the session
	Quit the MindLights® program
	Attach / read personal session information
	Help menu: manual as a PDF file
	Switches to the Music mode
	Options: change language and preferences
	Remove audio track from the session

Changes from Software Version 1.0 to 1.2

New functions

- Extended editing mode can be activated from the Options menu (visible grid,
- option to start a session at a certain predefined point , milliseconds timescale).
- Keyboard shortcuts for Start/Pause/Stop (X/C/V).
- Switching through markers and transitions with TAB und Shift+TAB

Bugs resolved

- Various symbol errors

Changes from Software Version 1.2 to 1.3

New functions

- Performance improvement for Windows Vista and Windows 7 (not XP or Mac) through triggering in native C.
- Slider adjustments can be embedded in the session file and can be done automatically.
- When starting directly from the USB stick, the software checks for the drivers and installs them if necessary.
- New folder layout on the USB Stick
- PDF files will be displayed in an external reader if installed
- The MindLights software can be launched from a network volume
- There is a desktop shortcut to start a novel demo session directly.
- Starting the software with the parameter „-open [filename]" will launch a session directly
- At first startup, the software suggests to play a demo session
- All sliders default to 50% at first startup
- All dialogues are adjusted for usability with larger font sizes.
- The Software remembers folder choices for music and attachments.
- Buttons in session wizard are easier to distinguish
- The session texts have been revised
- Improved performance for loading/editing/playing
- The de-installer shows the Mindfield logo
- **Bugs resolved**
- Errors when cloning markers in zoomed view.
- Selection rectangle at the window edge
- deleting history works as it should

EC Declaration of Conformity for the Mindfield® MindLights®

Accordance with the following directive(s):

The Electromagnetic Compatibility Directive (EMC) (2004/108/EG) | RoHS - Restriction of (the use of certain) hazardous substances (2011/65/EU) | WEEE Waste Electrical and Electronic Equipment (2002/96/EG & 2008/34/EG)

The manufacturer

Mindfield Biosystems Ltd. · Bogenstraße 11 · D-14169 Berlin · Germany
WEEE-Reg.-Nr. DE 24465971

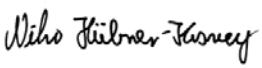
hereby declares that the following product:

Mindfield® MindLights®

complies with all applicable essential requirements of the directives.

It is in conformity with the applicable requirements of the following documents:

DIN EN 60950-1 Information technology equipment – Safety – Part 1: General requirements (2011-01) | DIN EN 55022 Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement (2008-05) | DIN EN 55024 Information technology equipment - Immunity characteristics - Limits and methods of measurement (2011-09)



Place: Berlin
Date: 24th of September, 2011
Niko Hübner-Kosney, Managing Director

The Mindfield MindLights have to be recycled as electrical waste according to the legal requirements.

Contact Information

Manufacturer

Mindfield® Biosystems Ltd. · Bogenstr. 11 · D-14169 Berlin/Germany

Phone: +49 (0)30 319 80 268 · Fax: +49 (0)30 812 96 145 · E-Mail: info@mindfield.de

For further inquiries, problems and warranty cases please contact us via e-mail or visit our website: www.mindfield.de

Please never send any unrequested or freight forward packages to us, since we cannot accept them.

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